

### Description

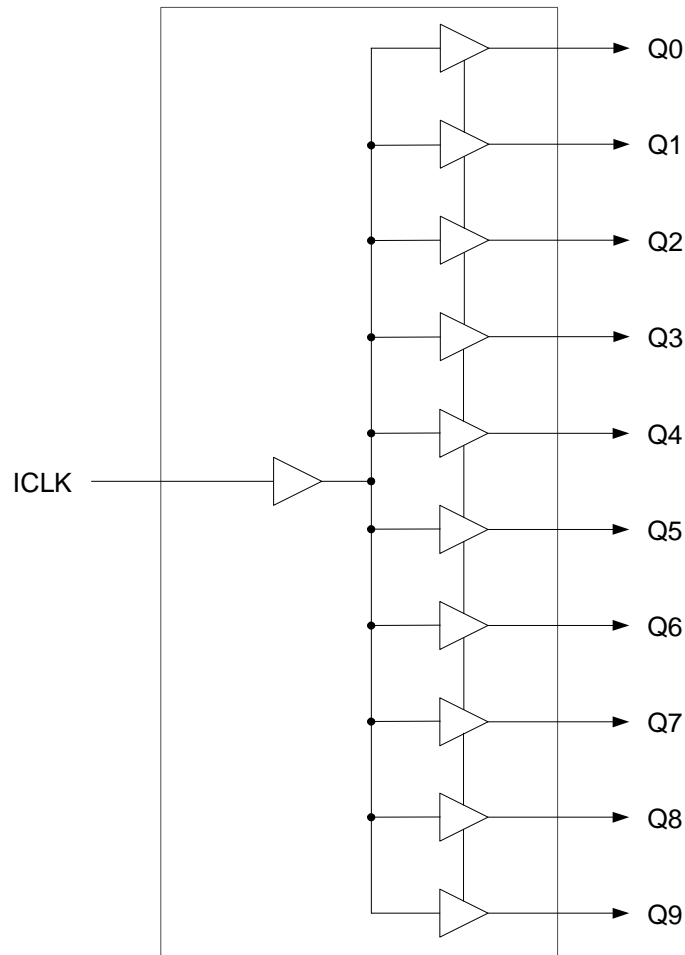
The 74FCT3807S is a low skew, single input to ten output, clock buffer. The 74FCT3807S has best in class additive phase Jitter of sub 50 fsec.

IDT makes many non-PLL and PLL based low skew output devices as well as Zero Delay Buffers to synchronize clocks. Contact us for all of your clocking needs.

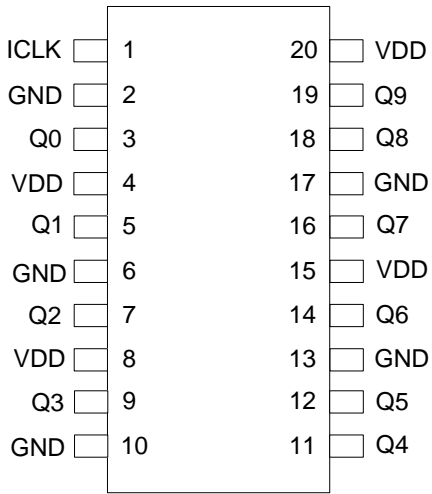
### Features

- Low additive phase jitter RMS: 50fs
- Low skew outputs (50ps)
- Packaged in 20-pin TSSOP, SSOP, QSOP and VFQFPN packages, Pb (lead) free
- Operating voltages of 1.8V to 3.3V
- Input/Output clock frequency up to 200 MHz
- Advanced, low power CMOS process
- Extended temperature range (-40°C to +105°C)

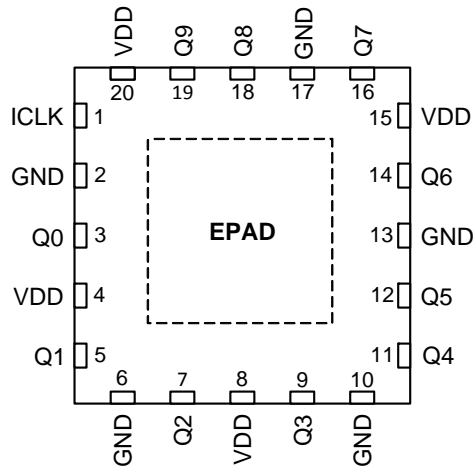
### Block Diagram



## Pin Assignments



20-pin TSSOP/SSOP/QSOP



20-pin VFQFPN

## Pin Descriptions

| Pin Number | Pin Name | Pin Type | Pin Description                      |
|------------|----------|----------|--------------------------------------|
| 1          | ICLK     | Input    | Clock input.                         |
| 2          | GND      | Power    | Connect to ground.                   |
| 3          | Q0       | Output   | Clock output 0.                      |
| 4          | VDD      | Power    | Connect to +1.8V, +2.5 V, or +3.3 V. |
| 5          | Q1       | Output   | Clock output 1.                      |
| 6          | GND      | Power    | Connect to ground.                   |
| 7          | Q2       | Output   | Clock Output 2.                      |
| 8          | VDD      | Power    | Connect to +1.8V, +2.5 V, or +3.3 V. |
| 9          | Q3       | Output   | Clock Output 3.                      |
| 10         | GND      | Power    | Connect to ground.                   |
| 11         | Q4       | Output   | Clock Output 4.                      |
| 12         | Q5       | Output   | Clock Output 5.                      |
| 13         | GND      | Power    | Connect to ground.                   |
| 14         | Q6       | Output   | Clock Output 6.                      |
| 15         | VDD      | Power    | Connect to +1.8V, +2.5 V, or +3.3 V. |
| 16         | Q7       | Output   | Clock Output 7.                      |
| 17         | GND      | Power    | Connect to ground.                   |
| 18         | Q8       | Output   | Clock Output 8.                      |
| 19         | Q9       | Output   | Clock Output 9.                      |
| 20         | VDD      | Power    | Connect to +1.8V, +2.5 V, or +3.3 V. |

## External Components

A minimum number of external components are required for proper operation. A decoupling capacitor of 0.01 $\mu$ F should be connected between VDD pins and GND pins, as close to the device as possible. A 33 $\Omega$  series terminating resistor may be used on each clock output if the trace is longer than 1 inch.

To achieve the low output skew that the 74FCT3807S is capable of, careful attention must be paid to board layout. Essentially, all ten outputs must have identical terminations, identical loads and identical trace geometries. If they do not, the output skew will be degraded. For example, using a 30 $\Omega$  series termination on one output (with 33 $\Omega$  on the others) will cause at least 15 ps of skew.

## Absolute Maximum Ratings

Stresses above the ratings listed below can cause permanent damage to the 74FCT3807S. These ratings, which are standard values for IDT commercially rated parts, are stress ratings only. Functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods can affect product reliability. Electrical parameters are guaranteed only over the recommended operating temperature range.

| Item                                     | Rating              |
|--|---------------------|
| Supply Voltage, VDD                      | 3.465V              |
| Outputs                                  | -0.5 V to VDD+0.5 V |
| ICLK                                     | 3.465V              |
| Ambient Operating Temperature (extended) | -40° to +105°C      |
| Storage Temperature                      | -65° to +150°C      |
| Junction Temperature                     | 125°C               |
| Soldering Temperature                    | 260°C               |

## Recommended Operation Conditions

| Parameter   | Min.  | Typ. | Max.   | Units |
|---|-------|------|--------|-------|
| Ambient Operating Temperature (extended)          | -40   |      | +105   | °C    |
| Power Supply Voltage (measured in respect to GND) | +1.71 |      | +3.465 | V     |

## DC Electrical Characteristics

(VDD = 1.8V, 2.5V, 3.3V)

**VDD=1.8V ±5%** , Ambient temperature -40° to +105°C, unless stated otherwise

| Parameter                | Symbol          | Conditions               | Min.    | Typ. | Max.    | Units |
|--------------------------|-----------------|--------------------------|---------|------|---------|-------|
| Operating Voltage        | VDD             |                          | 1.71    |      | 1.89    | V     |
| Input High Voltage, ICLK | V <sub>IH</sub> | Note 1                   | 0.7xVDD |      | VDD     | V     |
| Input Low Voltage, ICLK  | V <sub>IL</sub> | Note 1                   |         |      | 0.3xVDD | V     |
| Output High Voltage      | V <sub>OH</sub> | I <sub>OH</sub> = -10 mA | 1.3     |      |         | V     |
| Output Low Voltage       | V <sub>OL</sub> | I <sub>OL</sub> = 10 mA  |         |      | 0.35    | V     |
| Operating Supply Current | IDD             | No load, 135 MHz         |         | 35   |         | mA    |
| Nominal Output Impedance | Z <sub>O</sub>  |                          |         | 17   |         | Ω     |
| Input Capacitance        | C <sub>IN</sub> | ICLK                     |         | 5    |         | pF    |

Notes: 1. Nominal switching threshold is VDD/2

**VDD=2.5 V ±5%**, Ambient temperature -40° to +105°C, unless stated otherwise

| Parameter                | Symbol          | Conditions               | Min.    | Typ. | Max.    | Units |
|--------------------------|-----------------|--------------------------|---------|------|---------|-------|
| Operating Voltage        | VDD             |                          | 2.375   |      | 2.625   | V     |
| Input High Voltage, ICLK | V <sub>IH</sub> | Note 1                   | 0.7xVDD |      | VDD     | V     |
| Input Low Voltage, ICLK  | V <sub>IL</sub> | Note 1                   |         |      | 0.3xVDD | V     |
| Output High Voltage      | V <sub>OH</sub> | I <sub>OH</sub> = -16 mA | 1.8     |      |         | V     |
| Output Low Voltage       | V <sub>OL</sub> | I <sub>OL</sub> = 16 mA  |         |      | 0.5     | V     |
| Operating Supply Current | IDD             | No load, 135 MHz         |         | 45   |         | mA    |
| Nominal Output Impedance | Z <sub>O</sub>  |                          |         | 17   |         | Ω     |
| Input Capacitance        | C <sub>IN</sub> | ICLK                     |         | 5    |         | pF    |

**VDD=3.3 V ±5%** , Ambient temperature -40° to +105°C, unless stated otherwise

| Parameter                | Symbol          | Conditions               | Min.    | Typ. | Max.    | Units |
|--------------------------|-----------------|--------------------------|---------|------|---------|-------|
| Operating Voltage        | VDD             |                          | 3.15    |      | 3.45    | V     |
| Input High Voltage, ICLK | V <sub>IH</sub> | Note 1                   | 0.7xVDD |      | VDD     | V     |
| Input Low Voltage, ICLK  | V <sub>IL</sub> | Note 1                   |         |      | 0.3xVDD | V     |
| Output High Voltage      | V <sub>OH</sub> | I <sub>OH</sub> = -25 mA | 2.2     |      |         | V     |
| Output Low Voltage       | V <sub>OL</sub> | I <sub>OL</sub> = 25 mA  |         |      | 0.7     | V     |
| Operating Supply Current | IDD             | No load, 135 MHz         |         | 55   |         | mA    |
| Nominal Output Impedance | Z <sub>O</sub>  |                          |         | 17   |         | Ω     |
| Input Capacitance        | C <sub>IN</sub> | ICLK                     |         | 5    |         | pF    |

## AC Electrical Characteristics

(VDD = 1.8V, 2.5V, 3.3V)

**VDD = 1.8V ±5%**, Ambient Temperature -40° to +105°C, unless stated otherwise

| Parameter                         | Symbol                | Conditions   | Min. | Typ. | Max. | Units |
|-----------------------------------|-----------------------|--|------|------|------|-------|
| Input Frequency                   |                       |  | 0    |      | 200  | MHz   |
| Output Rise Time                  | t <sub>OR</sub>       | 0.36 to 1.44 V, C <sub>L</sub> =5 pF                   |      | 1.4  | 1.9  | ns    |
| Output Fall Time                  | t <sub>OF</sub>       | 1.44 to 0.36 V, C <sub>L</sub> =5 pF                   |      | 1.4  | 1.9  | ns    |
| Propagation Delay                 |                       | Note 1   | 1.5  | 2.5  | 4    | ns    |
| Buffer Additive Phase Jitter, RMS |                       | 125MHz, Integration Range: 12kHz-20MHz                 |      |      | 0.05 | ps    |
| Output to Output Skew             |                       | Rising edges at VDD/2, Note 2                          |      | 50   | 65   | ps    |
| Device to Device Skew             |                       | Rising edges at VDD/2                                  |      |      | 200  | ps    |
| Start-up Time                     | t <sub>START-UP</sub> | Part start-up time for valid outputs after VDD ramp-up |      |      | 2    | ms    |

**VDD = 2.5 V ±5%**, Ambient Temperature -40° to +105°C, unless stated otherwise

| Parameter                         | Symbol                | Conditions   | Min. | Typ. | Max. | Units |
|-----------------------------------|-----------------------|--|------|------|------|-------|
| Input Frequency                   |                       |  | 0    |      | 200  | MHz   |
| Output Rise Time                  | t <sub>OR</sub>       | 0.5 to 2.0 V, C <sub>L</sub> =5 pF                     |      | 1.0  | 1.5  | ns    |
| Output Fall Time                  | t <sub>OF</sub>       | 2.0 to 0.5 V, C <sub>L</sub> =5 pF                     |      | 1.0  | 1.5  | ns    |
| Propagation Delay                 |                       | Note 1   | 1.8  | 2.5  | 4.5  | ns    |
| Buffer Additive Phase Jitter, RMS |                       | 125MHz, Integration Range: 12kHz-20MHz                 |      |      | 0.05 | ps    |
| Output to Output Skew             |                       | Rising edges at VDD/2, Note 2                          |      | 50   | 65   | ps    |
| Device to Device Skew             |                       | Rising edges at VDD/2                                  |      |      | 200  | ps    |
| Start-up Time                     | t <sub>START-UP</sub> | Part start-up time for valid outputs after VDD ramp-up |      |      | 2    | ms    |

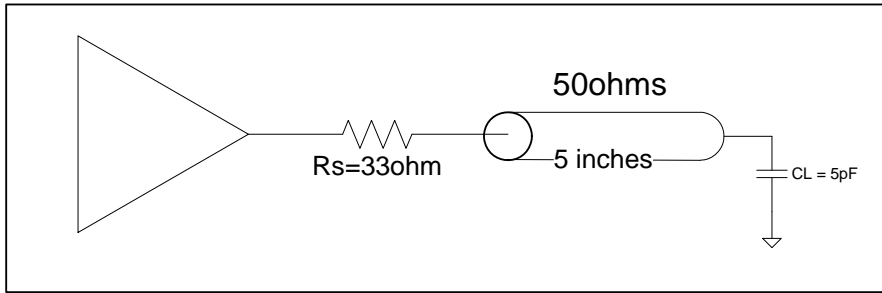
**VDD = 3.3 V ±5%**, Ambient Temperature -40° to +105°C, unless stated otherwise

| Parameter                         | Symbol                | Conditions   | Min. | Typ. | Max. | Units |
|-----------------------------------|-----------------------|--|------|------|------|-------|
| Input Frequency                   |                       |  | 0    |      | 200  | MHz   |
| Output Rise Time                  | t <sub>OR</sub>       | 0.66 to 2.64 V, C <sub>L</sub> =5 pF                   |      | 0.6  | 1.0  | ns    |
| Output Fall Time                  | t <sub>OF</sub>       | 2.64 to 0.66 V, C <sub>L</sub> =5 pF                   |      | 0.6  | 1.0  | ns    |
| Propagation Delay                 |                       | Note 1   | 1.5  | 2.5  | 4    | ns    |
| Buffer Additive Phase Jitter, RMS |                       | 125MHz, Integration Range: 12kHz-20MHz                 |      |      | 0.05 | ps    |
| Output to Output Skew             |                       | Rising edges at VDD/2, Note 2                          |      | 50   | 65   | ps    |
| Device to Device Skew             |                       | Rising edges at VDD/2                                  |      |      | 200  | ps    |
| Start-up Time                     | t <sub>START-UP</sub> | Part start-up time for valid outputs after VDD ramp-up |      |      | 2    | ms    |

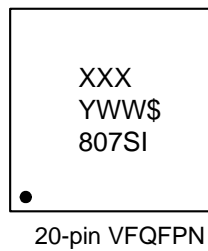
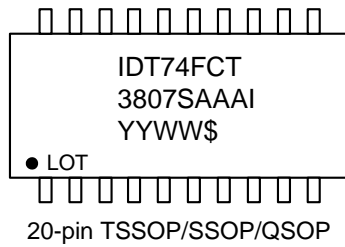
Notes:

1. With rail to rail input clock
2. Between any 2 outputs with equal loading.
3. Duty cycle on outputs will match incoming clock duty cycle. Consult IDT for tight duty cycle clock generators.

## Test Load and Circuit



## Marking Diagrams

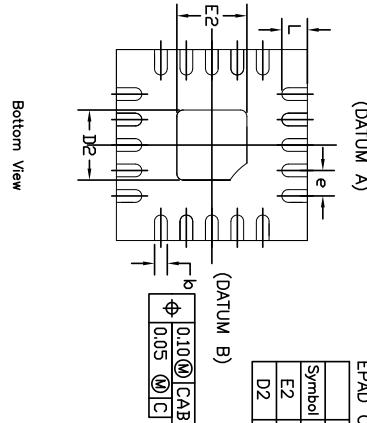
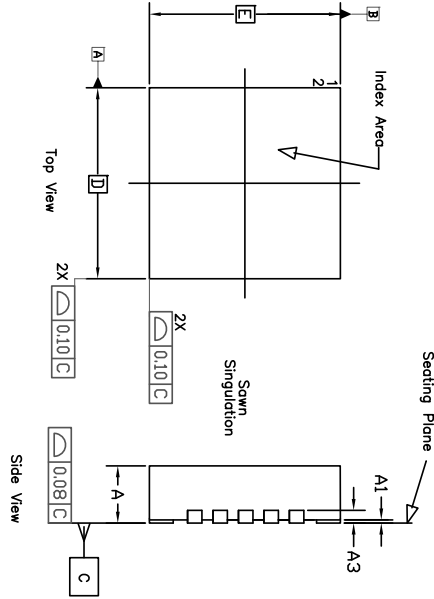


### Notes:

1. "LOT" denotes the lot number.
2. "XXX" denotes the lot number.
3. "YYWW" or "YWW" are the last digits of the year and week that the part was assembled.
4. "\$" denotes mark code.
5. "I" denotes extended temperature range device.
6. "AAA" denotes package code.

# Package Outline and Package Dimensions (20-pin VFQFPN)

- NOTE :
1. ALL DIMENSIONS ARE IN mm. ANGLES IN DEGREES.
  2. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.
  3. WARPAGE SHALL NOT EXCEED 0.05 mm.
  4. PACKAGE LENGTH / PACKAGE WIDTH ARE CONSIDERED AS SPECIAL CHARACTERISTIC. (S)
  5. REFER JEDEC MO-220.



EPAD OPTION

| Symbol | P1   |      |      | P2   |      |      |
|--------|------|------|------|------|------|------|
|        | MIN  | NOM  | MAX  | MIN  | NOM  | MAX  |
| E2     | 0.95 | 1.10 | 1.25 | 1.55 | 1.65 | 1.75 |
| D2     | 0.95 | 1.10 | 1.25 | 1.55 | 1.65 | 1.75 |

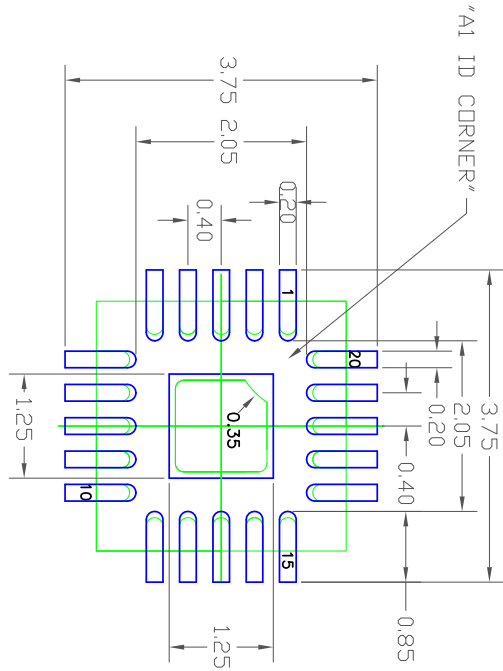
COMMON DIMENSION

| Symbol | Min             | Norm | Max  |
|--------|-----------------|------|------|
| A      | 0.80            | 0.90 | 1.00 |
| A1     | 0               | 0.02 | 0.05 |
| A3     | 0.20 Ref        |      |      |
| b      | 0.17            | 0.20 | 0.25 |
| e      | 0.40 BASIC      |      |      |
| N      | 20              |      |      |
| ND     | 5               |      |      |
| NE     | 5               |      |      |
| D      | 3.00 BASIC      |      |      |
| E      | 3.00 BASIC      |      |      |
| D2     | SEE EPAD OPTION |      |      |
| E2     | SEE EPAD OPTION |      |      |
| L      | 0.30            | 0.40 | 0.50 |

| REVISIONS |                            |          |          |
|-----------|----------------------------|----------|----------|
| REV       | DESCRIPTION                | DATE     | APPROVED |
| 00        | INITIAL RELEASE            | 11/14/08 | RC       |
| 01        | ADD EPAD OPTION            | 11/28/12 | RC       |
| 02        | COMBINE POD & LAND PATTERN | 12/5/13  | JHUA     |
| 03        | Change Dimension aaa       | 7/14/14  | JHUA     |

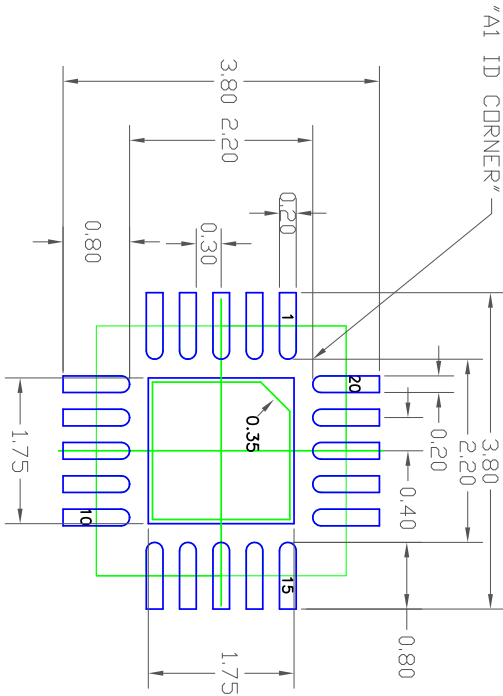
|  |                             |  |
|--|-----------------------------|--|
| <p>TOLERANCES UNLESS SPECIFIED DECIMAL ANGULAR</p> <p>XXXX+ E11</p>                            |                             | <p>6024 Silver Creek Valley Road<br/>San Jose CA 95138<br/>PHONE: (408) 284-8200<br/>WWW.IDT.COM FAX: (408) 284-8991</p> |
| <p>APPROVALS</p> <p>DRAWN <i>radg</i></p> <p>CHECKED</p>                                       | <p>DATE</p> <p>11/14/08</p> |  |
| <p>TITLE</p> <p>ND/NDG 20 PACKAGE OUTLINE</p> <p>3.0 x 3.0 mm BODY, 0.40 PITCH</p> <p>OPEN</p> |                             | <p>SIZE</p> <p>DRAWING No.</p> <p>PSC-4179</p>   |
| <p>DO NOT SCALE DRAWING</p>  |                             | <p>REV</p> <p>03</p>   |

# Package Outline and Package Dimensions, cont. (20-pin VFQFPN)



EPAD 1.1 mm SQ

RECOMMENDED LAND PATTERN DIMENSION



EPAD 1.65 mm SQ

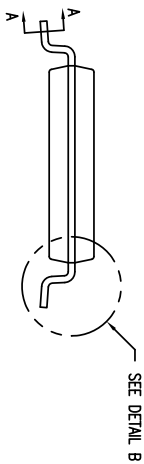
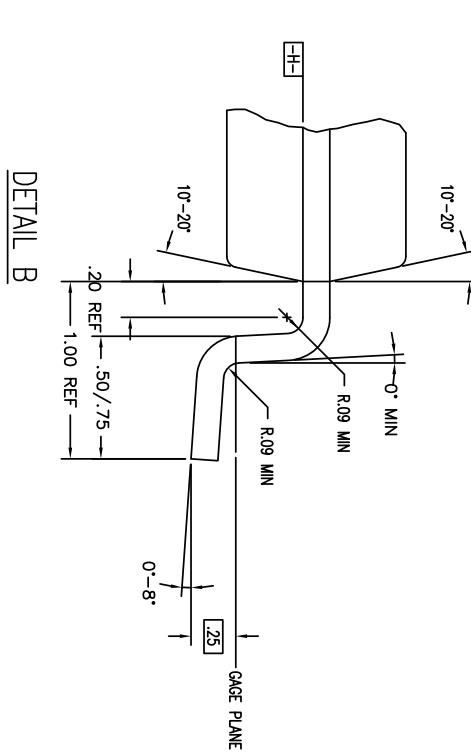
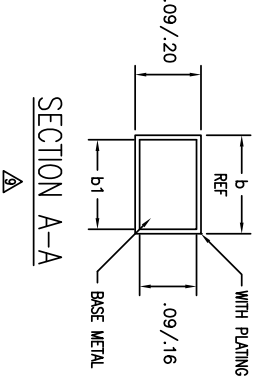
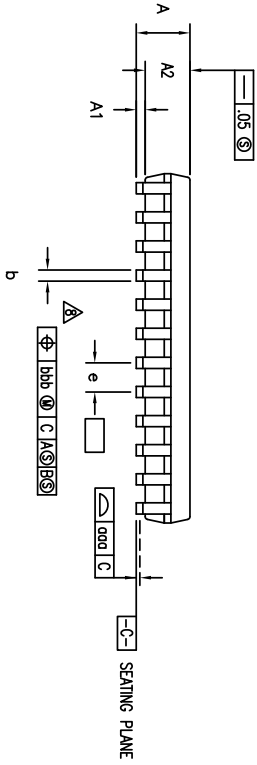
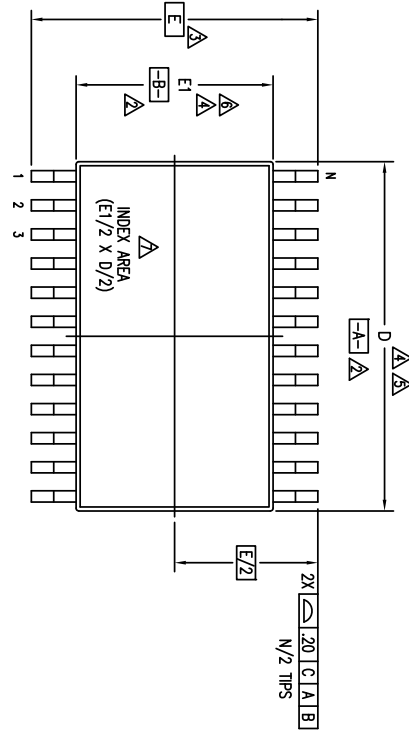
- NOTES:
1. ALL DIMENSION ARE IN mm, ANGLES IN DEGREES.
  2. TOP DOWN VIEW, AS VIEWED ON PCB.
  3. COMPONENT OUTLINE SHOW FOR REFERENCE IN GREEN.
  4. LAND PATTERN IN BLUE, NSMD PATTERN ASSUMED.
  5. LAND PATTERN RECOMMENDATION PER IPC-7351B GENERIC REQUIREMENT FOR SURFACE MOUNT DESIGN AND LAND PATTERN.

| REVISIONS |                            |          |          |
|-----------|----------------------------|----------|----------|
| REV       | DESCRIPTION                | DATE     | APPROVED |
| 00        | INITIAL RELEASE            | 11/14/08 | RC       |
| 01        | ADD EPAD OPTION            | 11/28/12 | RC       |
| 02        | COMBINE POD & LAND PATTERN | 12/5/13  | J.HUA    |
| 03        | Change dimension ooo       | 7/14/14  | J.HUA    |

|                             |          |   |   |
|-----------------------------|----------|---|---|
| TOLERANCES UNLESS SPECIFIED |          |   | 8024 Silver Creek Valley Road<br>San Jose CA 95138<br>PHONE: (408) 284-8200<br>FAX: (408) 294-8591<br>WWW.IDT.COM |
| DECIMAL                     | ANGULAR  |   |   |
| ±.1                         | ±1°      | TITLE ND/NDG 20 PACKAGE OUTLINE<br>3.0 x 3.0 mm BODY, 0.40 PITCH<br>QFN |   |
| APPROVALS                   | DATE     | SIZE  | DRAWING No.   |
| DRAWN: RAG                  | 11/14/08 | C   | PSC-4179  |
| CHECKED                     |          |   | REV 03  |
|                             |          | DO NOT SCALE DRAWING  |   |
|                             |          | SHEET 2 OF 2  |   |



Package Outline and Package Dimensions (20-pin TSSOP)



| REVISIONS |                              |          |         |
|-----------|------------------------------|----------|---------|
| REV       | DESCRIPTION                  | DATE     | APPROVE |
| 02        | ADD 14 & 16 LD               | 08/29/98 | T. VU   |
| 03        | ADD 8 LD                     | 07/10/99 | T. VU   |
| 04        | ADDED TOPMARK TO TITLE       | 5/23/01  | TU VU   |
| 05        | ADD "GREEN" PFG NOMENCLATURE | 10/14/04 | TU VU   |
| 06        | ADDED PACKAGE CODE           | 3/8/13   | RAC     |

|                             |             |                                      |  |
|-----------------------------|-------------|--------------------------------------|--|
| TOLERANCES UNLESS SPECIFIED |             | www.IDT.com                          |  |
| DECIMAL                     | ANGULAR     | 2975 Stender Way                     |  |
| XXX.X                       | ±           | Santa Clara, CA 95054                |  |
| XXXX                        |             | PHONE: (408) 727-6116                |  |
| XXXXX                       |             | FAX: (408) 492-8674                  |  |
| APPROVALS                   | DATE        | TITLE                                |  |
| DRWN 379                    | 01/15/96    | PG/PFG PACKAGE OUTLINE               |  |
| CHECKED                     |             | (PG OR PA TOPMARK CODE)              |  |
|                             |             | 4.4 mm BODY WIDTH TSSOP .65 mm PITCH |  |
| SIZE                        | DRAWING NO. | PSC-4056                             |  |
| C                           |             |                                      |  |
| DO NOT SCALE DRAWING        |             | SHEET 1 OF 01                        |  |

# Package Outline and Package Dimensions, cont. (20-pin TSSOP)

**NOTES:**

- 1 ALL DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5M-1994
- ▲ DATUMS **-A-** AND **-B-** TO BE DETERMINED AT DATUM PLANE **-H-**
- ▲ DIMENSION E TO BE DETERMINED AT SEATING PLANE **-C-**
- ▲ DIMENSIONS D AND E1 ARE TO BE DETERMINED AT DATUM PLANE **-H-**
- ▲ DIMENSION D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED .15 mm PER SIDE
- ▲ DIMENSION E1 DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS. INTERLEAD FLASH OR PROTRUSIONS SHALL NOT EXCEED .25 mm PER SIDE
- ▲ DETAIL OF PIN 1 IDENTIFIER IS OPTIONAL BUT MUST BE LOCATED WITHIN THE ZONE INDICATED
- ▲ LEAD WIDTH DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION IS .08 mm IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT
- ▲ THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN .10 AND .25 mm FROM THE LEAD TIP
- 10 ALL DIMENSIONS ARE IN MILLIMETERS
- 11 THIS OUTLINE CONFORMS TO JEDEC PUBLICATION 95 REGISTRATION MO-153, VARIATION AA, AB-1, AB, AC, AD & AE

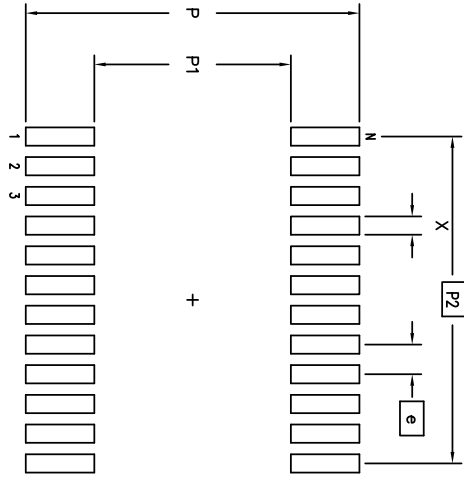
| PG/PG620        |      |      |         |
|-----------------|------|------|---------|
| JEDEC VARIATION |      |      | N O T E |
| AC              | NOM  | MAX  |         |
| MIN             | —    | 1.20 |         |
| —               | —    | .15  |         |
| .05             | —    | —    |         |
| .80             | 1.00 | 1.05 |         |
| 6.40            | 6.50 | 6.60 | 4.5     |
| 6.40 BSC        |      |      | 3       |
| 4.30            | 4.40 | 4.50 | 4.6     |
| .65 BSC         |      |      |         |
| .19             | —    | .30  |         |
| .19             | .22  | .25  |         |
| —               | —    | .10  |         |
| —               | —    | .10  |         |
| 20              |      |      |         |

| REVISIONS |                              |          |          |
|-----------|------------------------------|----------|----------|
| REV       | DESCRIPTION                  | DATE     | APPROVED |
| 02        | ADD 14 & 16 LD               | 08/25/98 | T. VU    |
| 03        | ADD 8 LD                     | 07/10/99 | T. VU    |
| 04        | ADDED TOPMARK TO TITLE       | 5/23/01  | TU VU    |
| 05        | ADD "GREEN" PGC NOMENCLATURE | 10/14/04 | TU VU    |
| 06        | ADDED PACKAGE CODE           | 3/8/13   | RAC      |

|                             |             |                                      |   |
|-----------------------------|-------------|--------------------------------------|---|
| TOLERANCES UNLESS SPECIFIED |             |                                      | 2975 Stender Way<br>Santa Clara, CA 95054<br>PHONE: (408) 727-6116<br>FAX: (408) 492-8674 |
| DECIMAL                     | ±           |                                      |   |
| ANGULAR                     | ±           |                                      |   |
| DATE                        | DATE        | TITLE                                |   |
| APPROVALS                   | DATE        | PG/PG6 PACKAGE OUTLINE               |   |
| DRAWN 979                   | 01/15/98    | (PG OR PA TOPMARK CODE)              |   |
| CHECKED                     |             | 4.4 mm BODY WIDTH TSSOP .65 mm PITCH |   |
| SIZE                        | DRAWING No. | REV                                  |   |
| C                           | PSC-4056    | 06                                   |   |
| DO NOT SCALE DRAWING        |             | SHEET 2 OF 3                         |   |

# Package Outline and Package Dimensions, cont. (20-pin TSSOP)

## LAND PATTERN DIMENSIONS



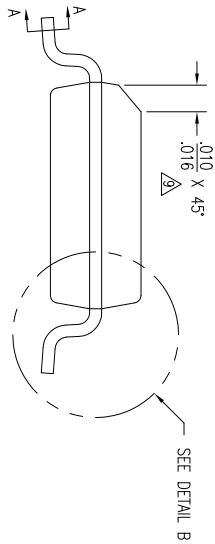
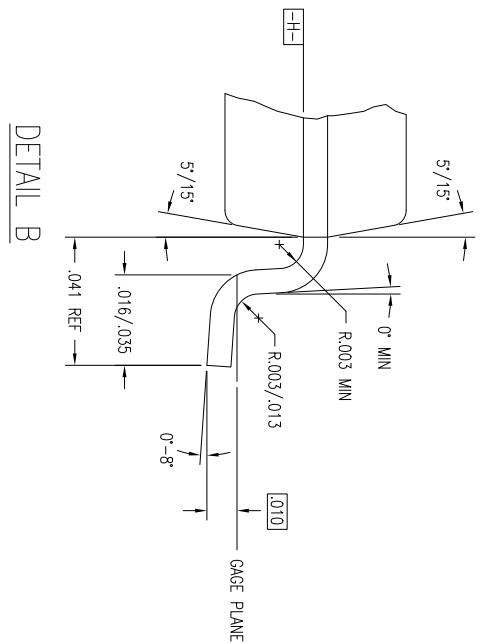
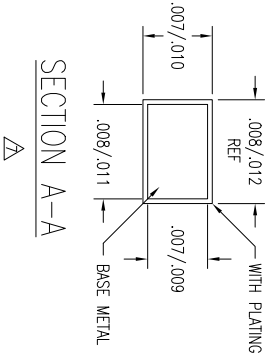
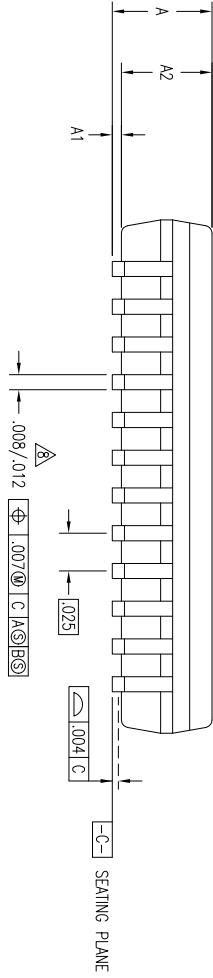
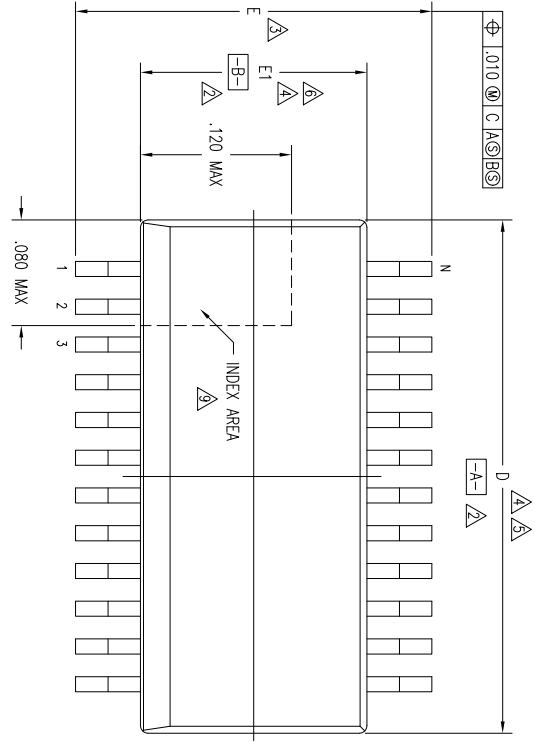
|  | MIN      | MAX  |
|--|----------|------|
|  | 7.20     | 7.40 |
|  | 4.20     | 4.40 |
|  | 5.85 BSC |      |
|  | .30      | .50  |
|  | .65 BSC  |      |
|  | 20       |      |

| REVISIONS |                              |          |          |
|-----------|------------------------------|----------|----------|
| REV       | DESCRIPTION                  | DATE     | APPROVED |
| 02        | ADD 14 & 16 LD               | 08/29/98 | T. YU    |
| 03        | ADD 8 LD                     | 07/10/99 | T. YU    |
| 04        | ADDED TOPMARK TO TITLE       | 5/23/01  | TU YU    |
| 05        | ADD "GREEN" PGG NOMENCLATURE | 10/14/04 | TU YU    |
| 06        | ADDED PACKAGE CODE           | 3/8/13   | RAC      |

| TOLERANCES                           |             |
|--------------------------------------|-------------|
| UNLESS SPECIFIED                     | ANGULAR     |
| DECIMAL                              | ±           |
| XXX.X                                |             |
| XXXX.X                               |             |
| XXXXX.X                              |             |
| APPROVALS                            | DATE        |
| DRAWN: JY                            | 01/19/98    |
| CHECKED:                             |             |
| TITLE PG/PGG PACKAGE OUTLINE         |             |
| (PG OR PA TOPMARK CODE)              |             |
| 4.4 mm BODY WIDTH TSSOP .65 mm PITCH |             |
| SIZE                                 | DRAWING No. |
| C                                    | PSC-4056    |
| REV                                  | 06          |
| DO NOT SCALE DRAWING                 |             |
| SHEET 3 OF 3                         |             |

2975 Stender Way  
 Santa Clara, CA 95054  
 PHONE: (408) 727-6116  
 FAX: (408) 492-8674  
 WWW.IDT.COM

# Package Outline and Package Dimensions (20-pin QSOP)



| REVISIONS |                              |          |        |    |
|-----------|------------------------------|----------|--------|----|
| REV       | DESCRIPTION                  | DATE     | APPROV | BY |
| 01        | REDRAW TO JEDEC FORMAT       | 03/10/95 | T. VU  |    |
| 02        | ADD 28 LD                    | 08/15/95 | T. VU  |    |
| 03        | CHANGE TO QSOP               | 12/15/99 | S.SUE  |    |
| 04        | ADD "GREEN" POG NOMENCLATURE | 10/08/04 | TU VU  |    |
| 05        | CHANGE RADIUS DIM            | 11/15/11 | OK LEE |    |

|                             |             |                              |   |
|-----------------------------|-------------|------------------------------|---|
| TOLERANCES UNLESS SPECIFIED |             |                              | 2975 Slender Way<br>Santa Clara, CA 95050<br>PHONE: (408) 727-6100<br>FAX: (408) 492-8674 |
| DECIMAL                     | ±           |                              |   |
| ANGULAR                     | ±           | www.IDT.com                  |   |
| APPROVALS                   | DATE        | TITLE PC/PCG PACKAGE OUTLINE |   |
| DRAWN                       |             | .150" BODY WIDTH QSOP        |   |
| CHECKED                     |             | .025" PITCH                  |   |
| SIZE                        | DRAWING No. | PSC-4040                     |   |
| C                           |             | DO NOT SCALE DRAWING         |   |
| R                           |             | SHEET 1 OF 1                 |   |

# Package Outline and Package Dimensions, cont. (20-pin QSOP)

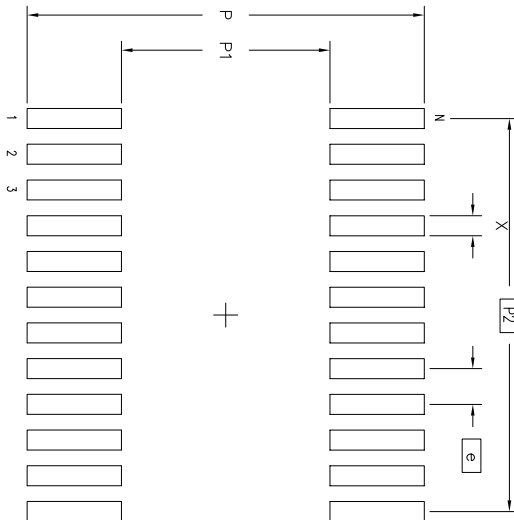
| JEDEC VARIATION |      |      | N<br>D<br>T<br>E |
|-----------------|------|------|------------------|
| AD              |      |      |                  |
| MIN             | NOM  | MAX  |                  |
| .061            | .064 | .068 |                  |
| .004            | .006 | .010 |                  |
| .055            | .058 | .061 | 11               |
| .337            | .342 | .344 | 4,5              |
| .230            | .236 | .244 | 3                |
| .150            | .155 | .157 | 4,6              |
| 20              |      |      |                  |

### NOTES:

- 1 ALL DIMENSIONING AND TOLERANCING CONFORM TO ANSI Y14.5M-1982
- ▷ DATUMS **-A-** AND **-B-** TO BE DETERMINED AT DATUM PLANE **-H-**
- ▷ DIMENSION E TO BE DETERMINED AT SEATING PLANE **-C-**
- ▷ DIMENSIONS D AND E1 ARE TO BE DETERMINED AT DATUM PLANE **-H-**
- ▷ DIMENSION D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS; MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED .006 PER SIDE
- ▷ DIMENSION E1 DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS; INTERLEAD FLASH OR PROTRUSIONS SHALL NOT EXCEED .010 PER SIDE
- ▷ THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN .005 AND .010 FROM LEAD TIP
- ▷ LEAD WIDTH DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION; ALLOWABLE DAMBAR PROTRUSION IS .004 IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE FOOT
- ▷ THE CHAMFER ON THE PACKAGE BODY IS OPTIONAL. IF IT IS NOT PRESENT, A VISUAL INDEX FEATURE MUST BE LOCATED WITHIN THE ZONE INDICATED
- 10 ALL DIMENSIONS ARE IN INCHES
- 11 THIS OUTLINE CONFORMS TO JEDEC PUBLICATION 95 REGISTRATION MO-137, VARIATION AB, AD, AE & AF. EXCEPTIONS: JEDEC DIMENSION A2 MAX IS .059

| REVISIONS |     |                              |          |          |
|-----------|-----|------------------------------|----------|----------|
| DCN       | REV | DESCRIPTION                  | DATE     | APPROVED |
| 28047     | 02  | ADD 28 LD                    | 08/15/95 | T. VU    |
|           | 03  | CHANGE TO QSOP               | 12/15/99 | S.SUE    |
|           | 04  | ADD "GREEN" PGC NOMENCLATURE | 10/08/04 | TU WU    |
|           | 05  | CHANGE RADIUS DIM            | 11/15/11 | CK LEE   |

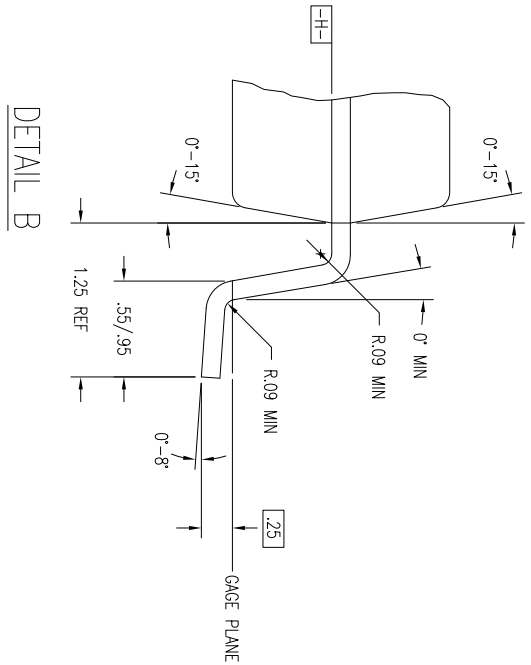
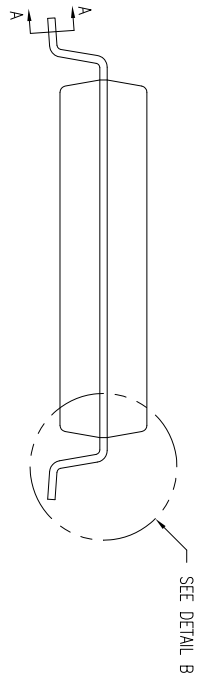
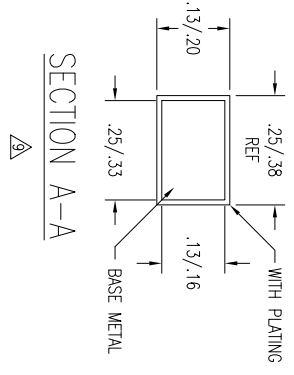
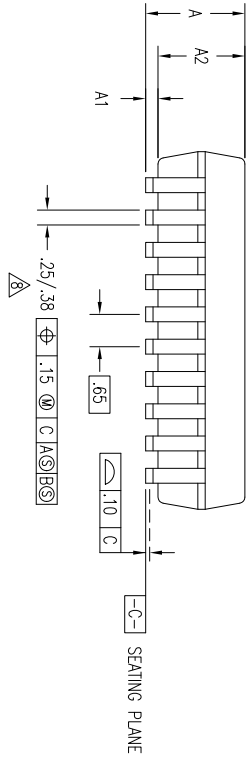
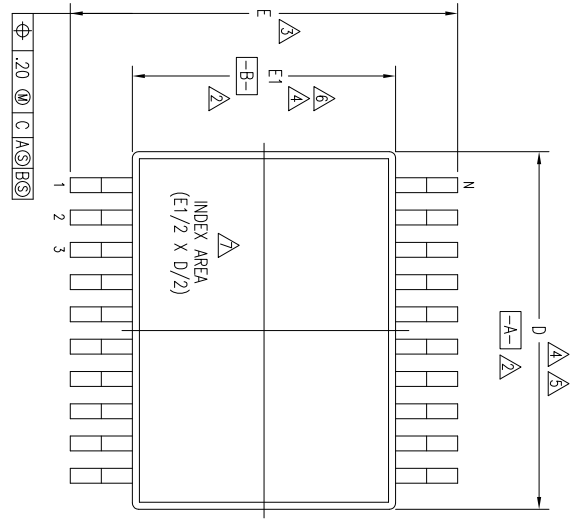
### LAND PATTERN DIMENSIONS



| MIN      | MAX  |
|----------|------|
| .274     | .282 |
| .142     | .150 |
| .225 BSC |      |
| .010     | .018 |
| .025 BSC |      |
| 20       |      |

|                             |         |   |   |
|-----------------------------|---------|---|---|
| TOLERANCES UNLESS SPECIFIED |         |   | 2975 Stender Way<br>Santa Clara, CA 95054<br>PHONE: (408) 727-6116<br>FAX: (408) 492-8674 |
| DECIMAL                     | ANGULAR |   |   |
| ± .005                      | ± .005  | www.IDT.com   |   |
| APPROVALS                   | DATE    | TITLE: PC/PGC PACKAGE OUTLINE<br>.150" BODY WIDTH QSOP<br>.025" PITCH |   |
| DRAWN                       |         | SIZE: C   | DRAWING No. PSC-4040  |
| CHECKED                     |         |   | REV: 05   |
|                             |         | DO NOT SCALE DRAWING  |   |
|                             |         | SHEET 2 OF 2  |   |

# Package Outline and Package Dimensions (20-pin SSOP)



|    |                              |          |       |
|----|------------------------------|----------|-------|
| 02 | REDRAW TO JEDEC FORMAT       | 03/15/95 | T. VU |
| 03 | ADD 14 & 16 LD               | 08/25/98 | T. VU |
| 04 | ADDED TOPMARK TO TITLE       | 5/23/01  | T. VU |
| 05 | ADD "GREEN" PYG NOMENCLATURE | 10/12/04 | TU VU |
| 06 | ADDED PACKAGE CODE           | 12/12/12 | RC    |

|                             |         |   |  |
|-----------------------------|---------|---|--|
| TOLERANCES UNLESS SPECIFIED |         |   | 6024 SILVERCREEK VALLEY F<br>SAN JOSE CA 95138<br>PHONE: (408) 284-8200<br>FAX: (408) 294-8591 |
| DECIMAL                     | ANGULAR |   |  |
| XX±                         | ±       | <a href="http://www.IDT.com">www.IDT.com</a>  |  |
| XXXX±                       |         | TITLE: PY/PYG PACKAGE OUTLINE<br>(PY OR PV TOPMARK CODE)<br>5.3 mm BODY WIDTH SSOP .65 mm PITCH |  |
| APPROVALS                   | DATE    | SIZE  | DRAWING No.  |
| CHECKED                     |         | C   | PSC-4032   |
|                             |         | REV   | 06   |

# Package Outline and Package Dimensions, cont. (20-pin SSOP)

| PY/PVCG20       |      |      |     | N<br>O<br>T<br>E |
|-----------------|------|------|-----|------------------|
| JEDEC VARIATION |      |      |     |                  |
| AE              |      |      |     |                  |
| MIN             | NOM  | MAX  |     |                  |
| 1.73            | 1.86 | 1.99 |     |                  |
| .05             | .13  | .21  |     |                  |
| 1.68            | 1.73 | 1.78 |     |                  |
| 7.07            | 7.20 | 7.33 | 4,5 |                  |
| 7.65            | 7.80 | 7.90 | 3   |                  |
| 5.20            | 5.30 | 5.38 | 4,6 |                  |
| 20              |      |      |     |                  |

## NOTES:

- 1 ALL DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5M-1994
- 2 DATUMS **-A-** AND **-B-** TO BE DETERMINED AT DATUM PLANE **-H-**
- 3 DIMENSION E TO BE DETERMINED AT SEATING PLANE **-C-**
- 4 DIMENSIONS D AND E1 ARE TO BE DETERMINED AT DATUM PLANE **-H-**
- 5 DIMENSION D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED .20 mm PER SIDE
- 6 DIMENSION E1 DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS. INTERLEAD FLASH OR PROTRUSIONS SHALL NOT EXCEED .20 mm PER SIDE
- 7 DETAIL OF PIN 1 IDENTIFIER IS OPTIONAL BUT MUST BE LOCATED WITHIN THE ZONE INDICATED
- 8 LEAD WIDTH DIMENSION DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION IS .13 mm IN EXCESS OF THE LEAD WIDTH DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR CANNOT BE LOCATED ON THE LOWER RADII OR THE FOOT
- 9 THESE DIMENSIONS APPLY TO THE FLAT SECTION OF THE LEAD BETWEEN .10 AND .25 mm FROM THE LEAD TIP
- 10 ALL DIMENSIONS ARE IN MILLIMETERS
- 11 THIS OUTLINE CONFORMS TO JEDEC PUBLICATION 95 REGISTRATION MO-150, VARIATION AB, AC, AE, AG & AH

|    |                              |       |
|----|------------------------------|-------|
| 02 | REDRAW TO JEDEC FORMAT       | 03/15 |
| 03 | ADD 14 & 16 LD               | 08/25 |
| 04 | ADDED TOPMARK TO TITLE       | 5/23  |
| 05 | ADD "GREEN" PYG NOMENCLATURE | 10/12 |
| 06 | ADDED PACKAGE CODE           | 12/12 |

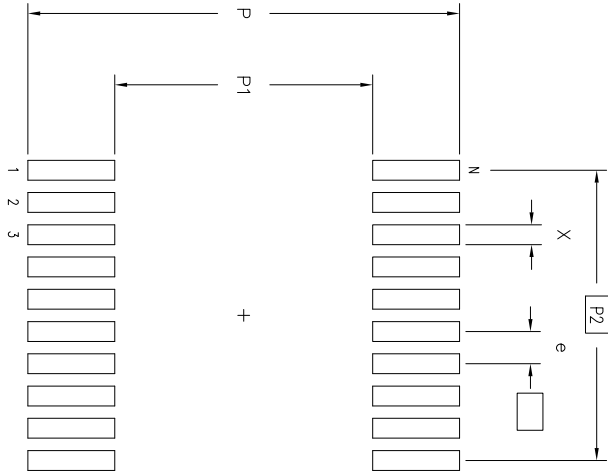
| TOLERANCES UNLESS SPECIFIED |             |
|-----------------------------|-------------|
| DECIMAL                     | ±           |
| ANGULAR                     |             |
| XXX±                        |             |
| XXXX±                       |             |
| XXXX±                       |             |
| APPROVALS                   | DATE        |
| DRAWN                       |             |
| CHECKED                     |             |
| SIZE                        | DRAWING No. |
| C                           | PSC-402     |

6024 SILV  
 SAN PHO  
 FAX:

TITLE PY/PVCG PACKAGE OUTLINE  
 (PY OR PV TOPMARK CODE)  
 5.3 mm BODY WIDTH SSC

# Package Outline and Package Dimensions, cont. (20-pin SSOP)

## LAND PATTERN DIMENSIONS



| MIN      | MAX  |
|----------|------|
| 8.60     | 8.80 |
| 5.10     | 5.30 |
| 5.85 BSC |      |
| .30      | .40  |
| .65 BSC  |      |
| 20       |      |

| REV | DESCRIPTION                  | DATE     | APPROVED |
|-----|------------------------------|----------|----------|
| 00  | INITIAL RELEASE              | 04/15/91 | T. VU    |
| 01  | ADD 28 LD                    | 07/27/93 | T. VU    |
| 02  | REDRAW TO JEDEC FORMAT       | 03/15/95 | T. VU    |
| 03  | ADD 14 & 16 LD               | 08/25/98 | T. VU    |
| 04  | ADDED TOPMARK TO TITLE       | 5/23/01  | T. VU    |
| 05  | ADD "GREEN" PYG NOMENCLATURE | 10/12/04 | TU VU    |
| 06  | ADDED PACKAGE CODE           | 12/12/12 | RC       |

|   |             |
|---|-------------|
| TOLERANCES UNLESS SPECIFIED   |             |
| DECIMAL   | ANGULAR     |
| XXX±  | ±           |
| XXXX±   |             |
| APPROVALS   | DATE        |
| DRAWN   |             |
| CHECKED   |             |
| 6024 SILVERCREEK VALLEY RD<br>SAN JOSE CA 95138<br>PHONE: (408) 284-8200<br>FAX: (408) 284-8591<br><a href="http://www.IDT.com">www.IDT.com</a> |             |
| TITLE: PY/PYG PACKAGE OUTLINE<br>(PY OR PV TOPMARK CODE)<br>5.3 mm BODY WIDTH SSOP .65 mm PITCH   |             |
| SIZE  | DRAWING No. |
| REV   |             |



## Ordering Information

| Part / Order Number | Marking    | Shipping Packaging | Package       | Temperature    |
|---------------------|------------|--------------------|---------------|----------------|
| 74FCT3807SNDGI      | see page 6 | Tubes              | 20-pin VFQFPN | -40° to +105°C |
| 74FCT3807SNDGI8     |            | Tape and Reel      | 20-pin VFQFPN | -40° to +105°C |
| 74FCT3807SPGGI      |            | Tubes              | 20-pin TSSOP  | -40° to +105°C |
| 74FCT3807SPGGI8     |            | Tape and Reel      | 20-pin TSSOP  | -40° to +105°C |
| 74FCT3807SQGI       |            | Tubes              | 20-pin QSOP   | -40° to +105°C |
| 74FCT3807SQGI8      |            | Tape and Reel      | 20-pin QSOP   | -40° to +105°C |
| 74FCT3807SPYGI      |            | Tubes              | 20-pin SSOP   | -40° to +105°C |
| 74FCT3807SPYGI8     |            | Tape and Reel      | 20-pin SSOP   | -40° to +105°C |

“G” after the two-letter package code denotes Pb-Free configuration, RoHS compliant.

## Revision History

| Rev. | Date     | Originator   | Description of Change |
|------|----------|--------------|-----------------------|
| A    | 03/18/15 | B. Chandhoke | Initial release.      |



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Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

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